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# Fault Monitoring System User Manual V1.3

Ref 21006FMS V1.3.doc

## 1. Revision History

| Version | Modifications | Date |
|---|---|---|
| 1.0 | Original issue. | 02/07/97 |
| 1.1 | Re-Formatted Version | 23/07/99 |
| 1.2 | Modifications | 06/10/01 |
| 1.3 | Add signal level details | 5/4/05 |
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DISCLAIMER

This manual contains information that is correct to the best of Audix Systems knowledge. It is intended to be a guide and should be used as such. It should not be considered as a sole source of technical instruction, replacing good technical judgement, since all possible situations cannot be anticipated. If there are any doubts as to exact installation, configuration and/or use, call Audix Systems at
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ACKNOWLEDGEMENTS
All trademarks are recognised

## 2. Technical Support

In the unlikely event of you having problems with your Fault Monitoring System please contact our Customer Services Department.

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## 3. Models Covered

This user manual covers the following equipment:

- FMS – Master Fault Monitoring Chassis
- FMSX – Slave Fault Monitoring Chassis
- VT704 – Auxiliary Monitoring Module
- VT705 – Surveillance Oscillator Module
- VT706- Fault Bus Termination Card
- VT725 – End of line monitor channel for FMS
- VT726 – End of Line Monitor Card
- VT681A – Surveillance Detector Module (Loudspeaker Level)
- VT681B – Surveillance Detector Module (Line Level)
- TPMSL100 – MSL1000 Interface Module

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**Diagrams**

1. Audio and surveillance levels
2. Data and EOL levels

## 5. Overview

This monitoring of an Audix Voice Alarm system is carried out using the Fault Monitoring System or 'FMS'. The FMS system offers a wide range of monitoring options:

- Audio path.
- Serial data link.
- Control contacts.
- Amplifier.
- Mains and battery supplies

For voice alarm systems that comply with BS5839 require all of the above to be monitored on critical paths and components. Critical paths are those paths through the voice alarm system that rely on equipment and the connections between them to achieve a voice alarm broadcast.

The 1U rack mounting FMS Master Chassis houses all Central Fault Warning and Local Power Status indicators as well as providing space for up to eight Monitoring Modules. Any monitored fault in the system is indicated here, providing a single, central, comprehensive check of the system status. The FMS Master Chassis is linked to Slave Chassis and Monitored Vector Amplifiers by a single ribbon cable.

Any fault condition in the system is indicated on the Central Fault Warning panel and externally by Volt-free changeover relay contacts for interfacing to the MCS.

All microprocessors within a system are fitted with watchdog circuits and a fault condition detected by any of these will sound a buzzer and increment a non-volatile counter on the Central Fault Warning panel.

Fault detection circuits are built into all Monitored Vector Power bloc Amplifiers and report any amplifier failure to the central panel.

Fault monitoring for Audix systems is based on the FMS Master Chassis and ancillary units connected to the Fault Monitoring Ribbon cable bus. The ancillary units supported include the FMSX Slave Chassis, *alpha* Matrix and various application specific devices.

The above items provide comprehensive Fault Monitoring for any system and are particularly applicable where the monitored system is required to comply with safety standards such as BS5839. The primary areas that may be monitored for faults are:

i) AC Power
ii) DC Power
iii) Audio paths (from the signal source to the end of loudspeaker circuits)
iv) Operation of Audio Power Amplifiers
v) Microprocessor Watchdogs
vii) Microprocessor Memory contents
vi) Serial Data paths

## 6. Non-Latched faults

The following faults will operate and latch the “Fault in System” LED and activate the buzzer. **However, the fault indicators will clear if the fault is fixed** (ie does not need the “Reset” pressed).

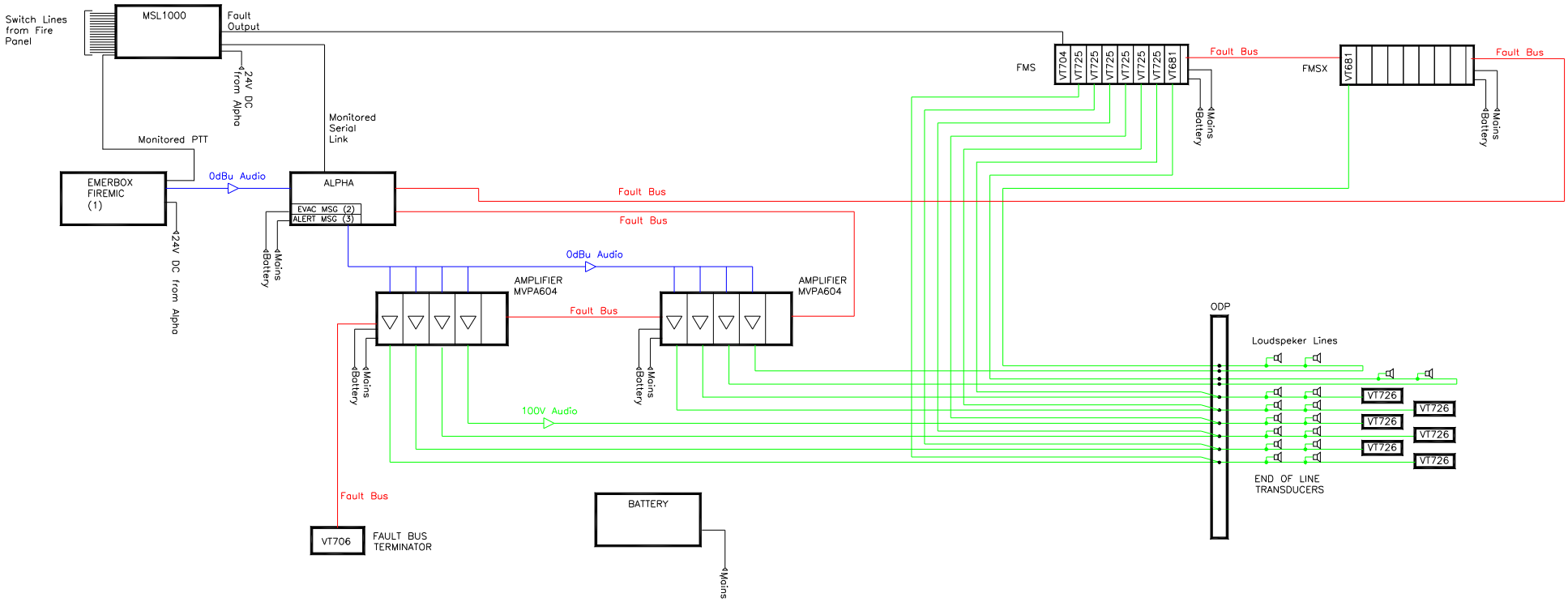
- Switch line failure (VT704 ie MSL1000 connection)
- SIUI/SMU data failure (the Alpha logs the number of SIUI faults). Alpha firmware version 5.16 and later DO latch a Comms fault.
- Battery Fail/Charger fail)
- Mains fail

IMPORTANT

- An EOL fault does NOT latch and also does NOT light the “Fault in System” LED. However, EOL failures are usually also indicated by the “Line Fail” LED which does latch.

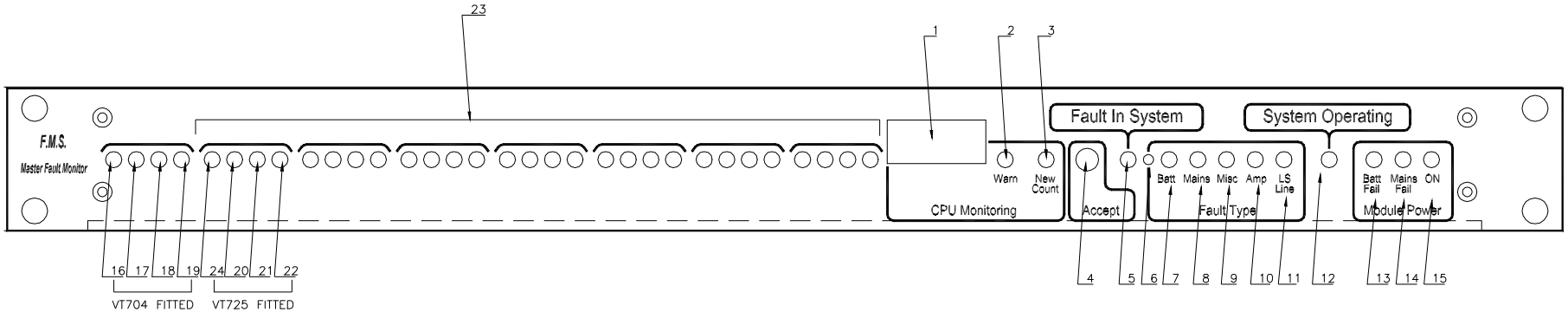
All other fault types latch on and need to be “Reset” to clear.

# Fault Monitoring System




**Schematic of A Fault Monitored System**

# Fault Monitoring System




LEGEND

1. CPU reset counter
2. CPU fault warning indicator
3. CPU new fault indicator
4. Fault accept push button
5. Fault in system indicator
6. Reset FMS recessed push button
7. System Battery Fault indicator
8. System Mains fault indicator
9. System miscelleneous fault indicator
10. System amplifier fault indicator
11. System Loudspeaker Line fault indicator
12. Fault Monitoring System in operation indicator
13. Battery Fail to FMS chassis indicator
14. Mains Fail to FMS chassis indicator
15. FMS Power On indicator
16. Auxillary Channel 1 fault indicator
17. Auxillary Channel 2 fault indicator
18. Auxillary Channel 3 fault indicator
19. Auxillary Channel 4 fault indicator
20. Loudspeaker Line fault indicator
21. Loudspeaker End of Line fault indicator
22. Loudspeaker Earth Fault indicator
23. Loudspeaker fault indicator channels (as required)
24. No Lamp

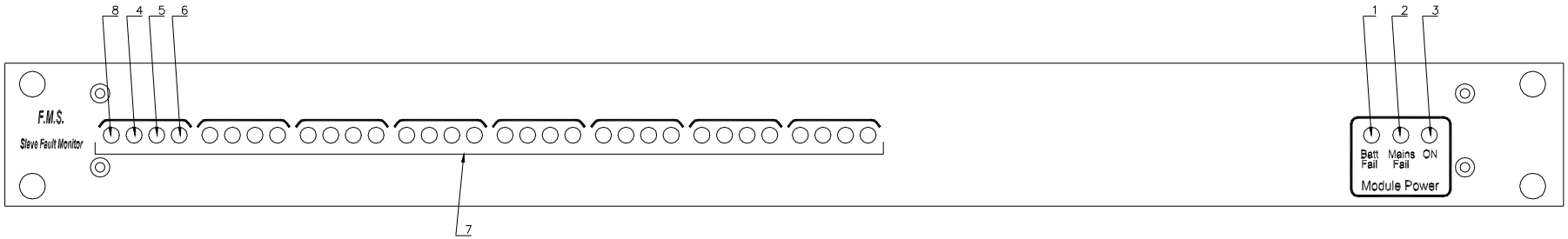
SPECIFICATION

1. 19 inch x 1U rack mounted fault monitoring master chassis.
   Finished in black semi-gloss powder coat with white lettering and red Tannoy Audix logos.

2. Status indicators;
   All power and system healthy indicators will be GREEN LEDs
   All fault indicators will be AMBER LEDs

3. Labelling;
   All auxillary channel and loudspeaker fault blocks will be labelled using black engraved labels with white lettering permanently glued to the front of the unit

# Fault Monitoring System




LEGEND

1. Battery Fail to FMS slave chassis indicator
2. Mains Fail to FMS slave chassis indicator
3. FMS Slave Chassis Power On indicator
4. Loudspeaker Line fault indicator
5. Loudspeaker End of Line fault indicator
6. Loudspeaker Earth Fault indicator
7. Loudspeaker fault indicator channels (as required)
8. No lamp

SPECIFICATION

1. 19 inch x 1U rack mounted fault monitoring slave chassis.
   Finished in black semi-gloss powder coat with white lettering and red Tannoy Audix logos.

2. Status indicators;
   All power and system healthy indicators will be GREEN LEDs
   All fault indicators will be AMBER LEDs

3. Labelling;
   All loudspeaker fault blocks will be labelled
   using black engraved labels with white lettering permanently glued to the front of the unit

### 6.1 FMS Master Chassis

The FMS Master Chassis is a 1U rack mounting unit which provides the central collection and display point for all fault monitoring information within a monitored Audix system.

The facilities it provides are as follows:

| | |
|---|---|
| MODULE POWER | Three indicators monitoring the power supply in this chassis only. |
| ON (indicator) | Power is available to drive this chassis.(If this indicator is off, other indicators on this panel may be invalid.) |
| MAINS FAIL (indicator) | No mains supply is available. |
| BATT FAIL (indicator) | No battery supply is available. |
| SYSTEM OPERATING (indicator) | Module Power On (Mains and/or batteries) indicator is on in all chassis connected to this FMS showing that all units are powered. |
| FAULT IN SYSTEM (indicator) | One (or more) faults have been detected within the monitored systems connected to this FMS.<br><br>If the indicator flashes then a new fault has been detected and should be accepted.<br><br>If the indicator is on steady then all faults have been accepted but one or more faults remain unrepaired.<br><br>An audible warning will sound while the indicator is flashing. Optionally, the audible warning may be permanently muted. |
| FAULT TYPE | Breakdown by category of Faults in System |
| BATT (indicator) | No battery supply is available. |
| MAINS (indicator) | Mains supply not available in a monitored chassis. |
| MISC (indicator) | Memory or sub-assembly fault. |
| AMP (indicator) | Amplifier fault in a Monitored Vector Amplifier Chassis. |
| LS LINE (indicator) | Fault in high frequency 20kHz surveillance signal path (amplifiers and loudspeaker circuits) |
| ACCEPT (button) | Accepts the presence of a new fault in the system, stopping the flashing of the Fault in System indicator and leaving it either off (if the fault has been removed), or on steady (if the fault persists). Also cancels New Count indicator and mutes the audible warning. |
| RESET (hidden button) | Resets latched indicators on Surveillance Detectors in FMS (no legend) and FMSX Chassis and Amplifier fault indicators on FMC's. Hold down for real time display of these faults.<br><br>To avoid re-triggering Fault in System indicator, operate this button in conjunction with Accept button. |

| | |
|---|---|
| CPU MONITORING | Monitoring of microprocessor watchdogs in all chassis in the system. |

| | |
|---|---|
| COUNTER (7-digit) | Total count of watchdog faults reported from all chassis in system. The device fitted is a non-volatile (electromagnetic) non-resettable counter and hence displays the total watchdog fault count throughout the life of the unit. |
| WARN (indicator) | One (or more) microprocessor watchdog faults have been detected and remain unrepaired within the monitored systems connected to this FMS. |
| NEW COUNT (indicator) | A new microprocessor fault has been detected and should be accepted. |

### 6.2 FMSX Slave Chassis

The FMSX Slave Chassis is similar in appearance to the FMS Master Chassis and is connected to it by the Fault Monitoring Ribbon cable bus. The system may be extended by fitting further FMSX Slave Chassis. The facilities provided, in each, are as follows:

| | |
|---|---|
| MODULE POWER | as for FMS above |
| PLUG-IN MONITORING MODULES | up to eight further modules as for FMS above. |

### 6.3 Plug in Monitoring Modules

These modules may be fitted into the Monitor Module slots in either the FMS Master or FMSX Slave Chassis, with a maximum of eight being housed in each chassis.

For full details on each of the fault monitoring modules available please refer to Fault Monitoring Module Details section of this manual

## 7. Interfacing with Audix Equipment

Faults are transferred between equipment in one of two ways via single contacts or via the fault bus.

### 7.1 MSL1000 to FMS

A Single switch contact from the MSL1000 is provided showing there is a Fault has been detected with either the MSL1000 or the Alarm Switch lines. A VT704 auxiliary monitor card must be fitted to the FMS to monitor this contact.

### 7.2 Amplifier to FMS

The Vector Power amplifier has built in fault monitoring card (FMC) that provides monitoring and display of faults within the amplifier chassis.

All faults detected are reported to the system FMS via the Fault Monitoring Ribbon Cable bus. The following indications are provided:

| | |
|---|---|
| ON | Power is available to drive this chassis. (If this indicator is off, other indicators on this panel may be invalid.) |
| Power Fail Main | No mains supply is available. |
| Battery | Not applicable as battery charger forms part of the separate battery pack. |
| Charger | Not used. Indicated on battery packs. |
| Amplifier Fail (4 off) | The indicated amplifier power block is faulty. These indicators are latched on this card and must be reset from the FMS. |

### 7.3 *Alpha* to FMS

As the *alpha* forms a major part of the signal control and routing, it is a critical component and therefore requires monitoring. The *alpha* can also be configured to perform monitoring on other critical paths and components connected to it.
Each voice alarm system that is to comply to BS5839 and other standards requires to be specifically designed to achieve that end.

#### 7.3.1 Supply Monitoring

The *alpha* provides fault monitoring of the primary and secondary power supplies.

- Mains
- 24 Volt Battery

Indication of supply failure is in the form of front panel LED's

- Mains supply failure
- Battery supply low voltage/failure
- Charger failure (fault line from external charger)

Detection of these supplies is repeated at the FMS unit.

Indication that 'power' is present from either of the supplies is in the form of a green 'power on' LED.

### 7.3.2 Audio monitoring

Monitoring of the critical audio path generally requires the signal path though the following components and connections:

- Microphone capsule.
- Microphone pre amplifier.
- *alpha* audio stages including the switching matrix.
- Power amplifiers.
- End of speaker line.

The input source that is to be monitored may be a line level input from another voice alarm system or messages stored internally/externally to the *alpha*.
The audio fault monitoring system relies upon generation of a 20Khz surveillance tone.
This tone is injected or mixed into the audio input source.
The signal from this input source including the surveillance tones is routed to the speaker circuit.

A 20KHz FMS detector module at the end of the speaker circuit detects the presence of the surveillance signal.

On a fault occurring in this path a fault indication is displayed at the FMS unit (once the detector timeout has been reached).

Under both broadcast and non-broadcast conditions the signal from the surveyed input source is routed to the speaker circuit detector in a short burst or pulse (the route is ‘made’ for approximately 20ms).

Where a number of input sources are to be surveyed, each source is sequentially routed to the speaker circuit detector. This surveillance ‘routing’ occurs every 30s. If a fault occurs in any one of the critical input sources, one of the ‘pulses’ in that sequence will not emerge from the *alpha* matrix, thus causing a fault to be detected.

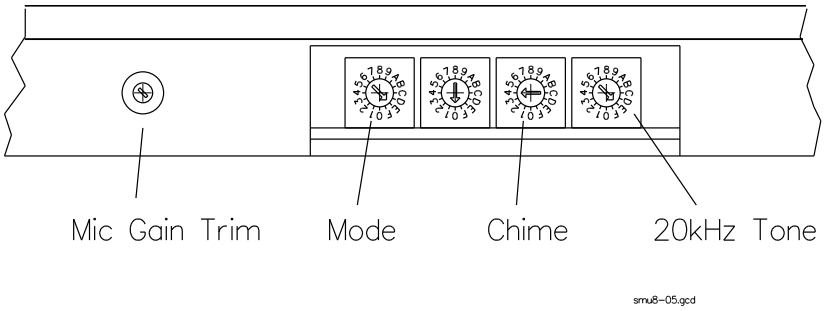
### 7.3.3 Microphone Unit Surveillance

Standard SMU range of microphone units *Except the SMU1*.

A 20KHz surveillance tone is automatically generated within the SMU.
This signal is injected or ‘mixed’ into the critical route within the SMU.
Failure in any part of the audio circuit, including open or short circuit of the microphone capsule will result in the level of surveillance tone being reduced to an undetectable level.

The FMS will detect the failure of the surveillance signal to emerge from the microphone unit.

This is generally achieved by the speaker circuit detectors, although line level detectors maybe connected at the microphone input to the equipment rack to aid fault diagnostics.




20kHz Switch settings

| | |
|---|---|
| 0 | No surveillance |
| 1 | 20kHz minimum output level. |
| x | Increasing by 3dB steps |
| F | 20kHz maximum output level |

### 7.3.4 Microphone Surveillance (using pre amplifier)

Microphone units without a built-in surveillance generator *i.e. SMU1* maybe connected to a MPAB3 or equivalent device.

The MPAB3 a wall mounted microphone pre amplifier features a 20kHz surveillance tone generator.
This signal is injected or 'mixed' into the critical route which includes the (external) microphone capsule
Failure in any part of the audio circuit, including open or short circuit of the microphone capsule will result in the level of surveillance tone being reduced to an undetectable level.

The FMS will detect the failure of the surveillance signal to emerge from the microphone unit.
This is generally achieved by the speaker circuit detectors, although line level detectors maybe connected at the microphone input to the equipment rack to aid fault diagnostics.

The surveillance level is set on the MPAB3 by turning VR2, labelled "Set 20KHz level"

### 7.3.5 Message Card Surveillance

*alpha* controller with message card option only.

The alpha message card features a 20kHz-surveillance tone generator.
The tone is digitally generated by the DSP processor and mixed with the digital audio message.

Failures of any part of the digital or audio circuit will result in the level of tone being reduced to an undetectable level.

The FMS will detect the failure of the surveillance signal to emerge from the message card.
This is generally achieved by the speaker circuit detectors.

### 7.3.6 Surveillance & Audix Amplifiers

In order to allow the surveillance through the system, Output 16 the *alpha*'s I/O port should be configured to send a wake up signal to power amplifiers. The purpose of this signal is to command Audix MOSFET Power blocs to change from their low power consumption mode (asleep) to quiescent state (awake). This allows the surveillance tone to pass through amplifiers without missing the first part of the signal.

### 7.3.7 Data Comm's Monitoring

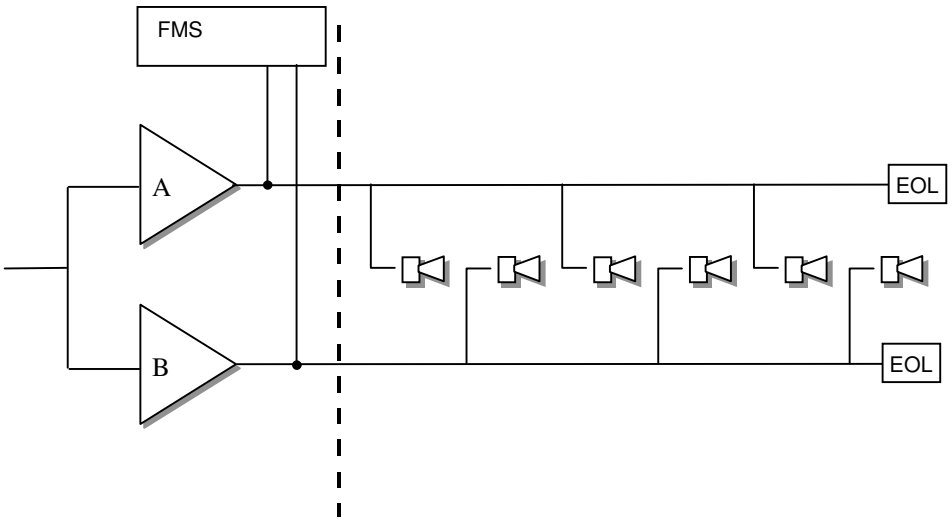
Fault monitoring of data communication and Input Controllers (microphone processor).
The *alpha* controller continually polls SIU's (serial interface unit) connected to it. On failing to receive a valid response from the SIU, the alpha can be configured to report a comm's fault.
Failure or corrupted memory within the input controller can also be detected. These faults are indicated on the front panel and repeated to the FMS.

## 7.4 Loudspeaker Line Surveillance (BS EN 60849:1998)

A Surveillance Monitor Module slotted either the FMS Master or Slave Chassis provides loudspeaker line surveillance. Each detector monitors the presence on the loudspeaker lines of 20kHz signal injected into the system by the microphone pre-amplifier MPAB3 located in the PA Equipment Rack. Two front panel indicators give separate warnings of line shorted to ground and line open or short circuit.

Two forms of speaker monitoring can be utilised; End of Line or Loop Back.

### 7.4.1 End Of Line Monitoring



End of line monitoring type devices have a third indicator giving indication should the remote detector become disconnected.

To allow monitoring of the integrity of the entire line each detector is connected to an end of line transponder functioning on a 3 conductor circuit.

The unit is supplied as a standard Matt Chrome MK double blanking plate (3329MCO).

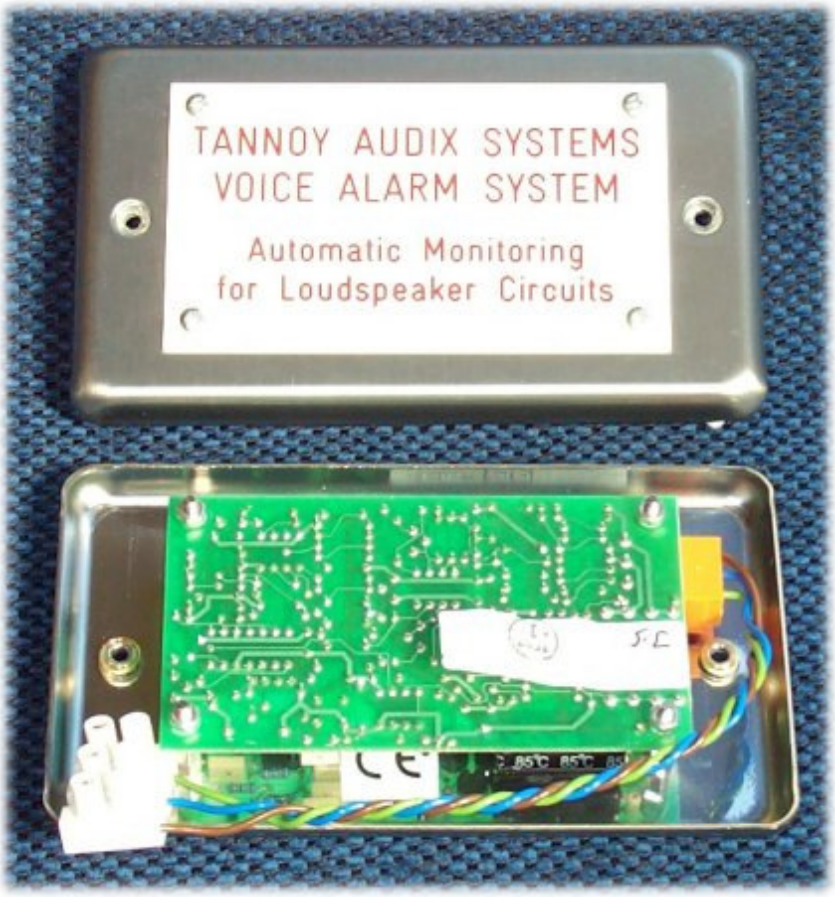
For 'End of line' monitoring cabling should be extended to a 2 gang box (min depth 32mm) supplied and mounted by the installer in a serviceable location. If it is not possible to fit the units at less than 3 metres high Audix should be consulted to confirm serviceability.

Care should be taken to avoid undue stress on the circuit board or the components on it by excessive cable tails.

The entire loudspeaker circuit must have the outer shell isolated from earth or provide a third conductor. **It is essential that the outer sheath/third conductor is continuous from the EOL unit to the equipment rack** and that it is not used as a protection earth under any circumstances.

The unit is wired as follows;

| | |
|---|---|
| Brown; | Live core 1 |
| Blue; | Live core 2 |
| Green; | Screen or third conductor |




Audix engineering should be consulted to assist if any queries arise.

**Operation (see drawing at rear of this handbook);**

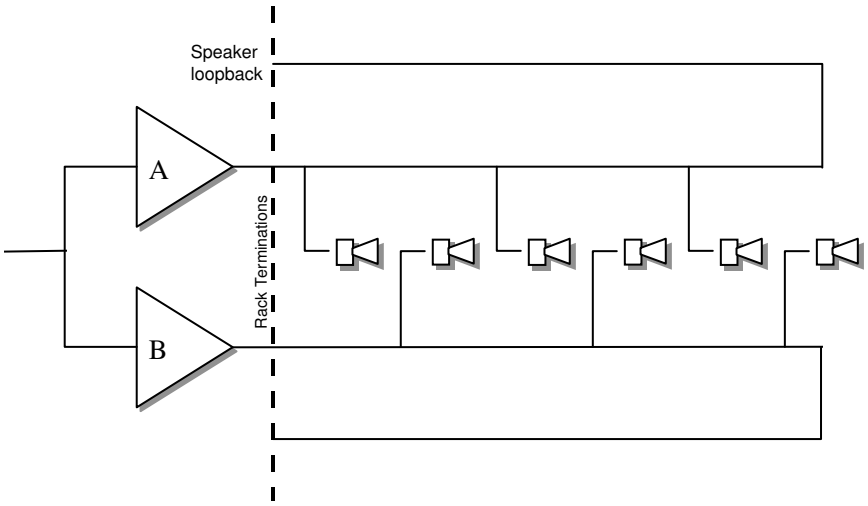
The system outputs a 20-30ms long 20KHz pulse down the 100V loudspeaker line of between 0.6 – 6V peak to peak.

The End of Line unit responds by applying a DC offset to the 100V line relative to the )v of the rack supply.

If the DC voltage is measured between one leg of the 100V line and the 0V reference the following levels should be detected;
Idle state = 12V
EOL pulse = 10V for approx 1 second every 30 seconds
If the DC offset is less than 8V this typically indicates an Earth fault
If the DC offset is greater than 13V this typically indicates an EOL fault.

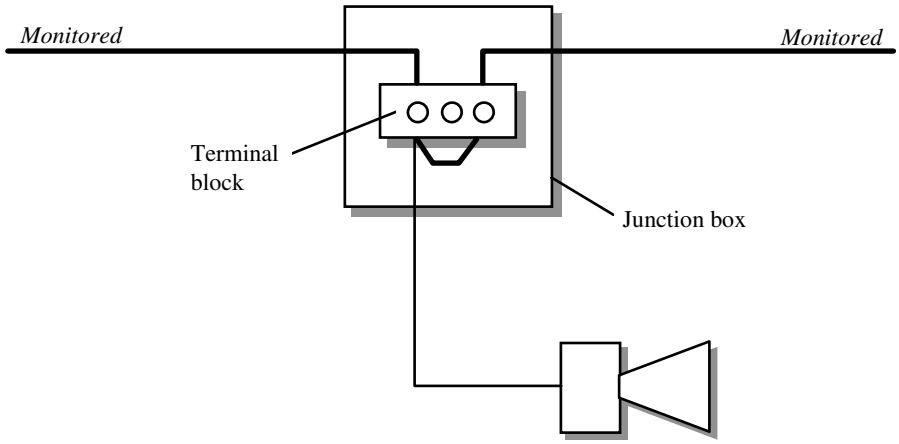
### 7.4.2 Loop Back Monitoring

On a loop back system each detector is connected to a pair of conductors returned from the loudspeaker at the far end of the line.




If a loop monitored loudspeaker circuit is specified then a return cable is required from the last speaker or junction box. Cable size should be a minimum of 0.5mm² twin and is similar fire rating to that of the main circuit. It is important with this type of monitoring that all loudspeakers/junction boxes are on one loop as spurs will not be monitored.

The surveillance monitors the speaker loop cable up to the terminal block in the junction box (supplied by others) leading to the speaker




Speaker Line Surveillance

Loudspeaker lines are protected from short circuit in the first instance by current limiting on the output of the amplifiers. If the failure persists, the amplifier output transistors will start to get hot. A thermal cut-out is triggered at 85 °C which reduces the amplifier input to reduce the transistor load.

## 8. Fault Monitoring Module Details

### 8.1 VT704 (Auxiliary Monitoring Module) Connector Pin Out and Jumper Settings

This module is part of the Audix FMS (fault monitoring system) it is installed in either the FMS or FMSX chassis.

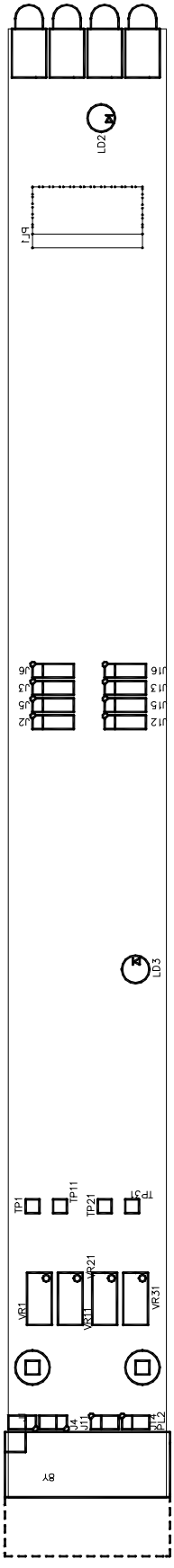
It is used to monitor four external lines for DC voltage conditions.

Compares voltage on each line with individually adjustable reference and provides selectable high/low alarm and interfaces into the FMS.

| ID | Std Fit* | Alt | Function |
|---|---|---|---|
| J1 | - | open | Channel 1 set to monitor external voltage. |
| J1 | fit | - | Channel 1 set to monitor a switching contact. |
| J2 | 1-2 | - | Channel 1 to show fault on high voltage or N.C. contact. |
| J2 | - | 2-3 | Channel 1 to show fault on low voltage or N.O. contact. |
| J3 | 1-2 | - | Channel 1 fault reported by FMS as Mains Fault ( /PF ). |
| J3 | - | 2-3 | Channel 1 fault reported by FMS as Miscellaneous Fault. (/MF) |
| | | | |
| J4 | - | open | Channel 2 set to monitor external voltage. |
| J4 | fit | - | Channel 2 set to monitor a switching contact. |
| J5 | 1-2 | - | Channel 2 to show fault on high voltage or N.C. contact. |
| J5 | - | 2-3 | Channel 2 to show fault on low voltage or N.O. contact. |
| J6 | 1-2 | - | Channel 2 fault reported by FMS as Battery Fault ( /BF ). |
| J6 | - | 2-3 | Channel 2 fault reported by FMS as Miscellaneous Fault. (/MF) |
| | | | |
| J11 | - | open | Channel 3 set to monitor external voltage. |
| J11 | fit | - | Channel 3 set to monitor a switching contact. |
| J12 | 1-2 | - | Channel 3 to show fault on high voltage or N.C. contact. |
| J12 | - | 2-3 | Channel 3 to show fault on low voltage or N.O. contact. |
| J13 | 1-2 | - | Channel 3 fault reported by FMS as Mains Fault ( /PF ). |
| J13 | - | 2-3 | Channel 3 fault reported by FMS as Miscellaneous Fault. (/MF) |
| | | | |
| J14 | - | open | Channel 4 set to monitor external voltage. |
| J14 | fit | - | Channel 4 set to monitor a switching contact. |
| J15 | 1-2 | - | Channel 4 to show fault on high voltage or N.C. contact. |
| J15 | - | 2-3 | Channel 4 to show fault on low voltage or N.O. contact. |
| J16 | 1-2 | - | Channel 4 fault reported by FMS as Battery Fault ( /BF ). |
| J16 | - | 2-3 | Channel 4 fault reported by FMS as Miscellaneous Fault. (/MF) |

| Terminal No | Function |
|---|---|
| 1 | Channel 1 Input |
| 2 | Channel 2 Input |
| 3 | 0V |
| 4 | Channel 3 Input |
| 5 | Channel 4 Input |
| 6 | 0V |

### 8.1.1 VT704 Board Layout



### 8.2 VT705 (Surveillance Oscillator Module) Connector Pin Out and Jumper Settings

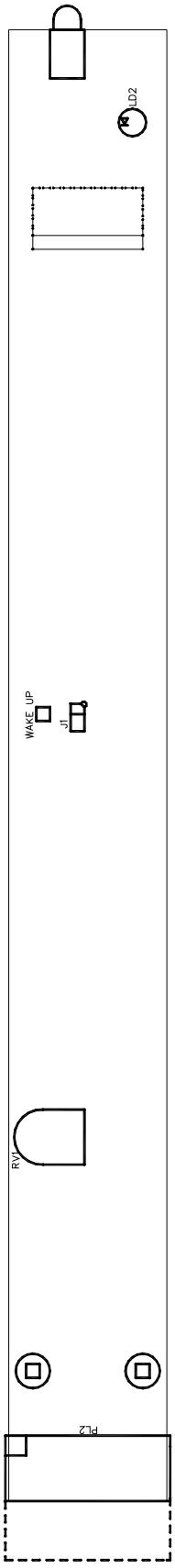
This module is part of the Audix FMS (fault monitoring system) it is installed in the FMS or FMSX chassis.

This module provides 20kHz surveillance tone output. The output can be either Pulsed or constant, and has outputs with reference to 100v Line, Line level and mic level signals.

| ID | Std Fit | Alt | Function |
|---|---|---|---|
| J1 | fit | | Enable |
| J1 | | open | Disable |

| Terminal No | Function |
|---|---|
| 1 | 20kHz Out + (wrt. LS Level) |
| 2 | 20kHz Out - (wrt. LS Level) |
| 3 | 20kHz Out + (wrt. Line Level) |
| 4 | 20kHz Out - (wrt. Line Level) |
| 5 | 20kHz Out + (wrt. Mic Level) |
| 6 | 20kHz Out - (wrt. Mic Level) |

### 8.2.1 VT705 Board Layout



### 8.3 VT681 (Surveillance Detector Module) Connector Pin Out and Jumper Settings

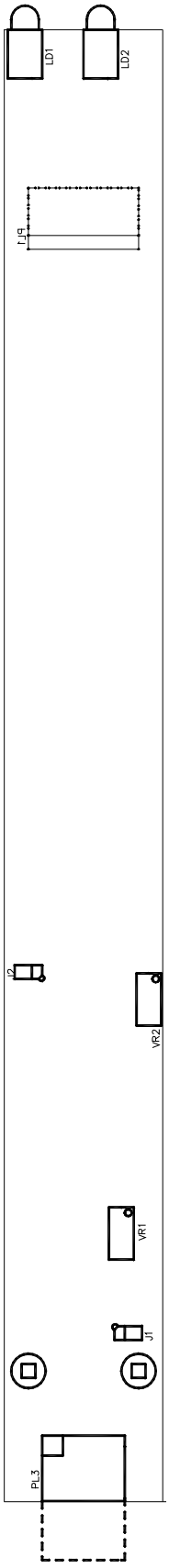
This module is part of the Audix FMS (fault monitoring system) it is installed in the FMS or FMSX chassis.

Two standard versions are produced, one set up for monitoring 100V LS line circuits, the other set for 0dBu distribution line level circuits.

| ID | Std Fit | Alt | Function |
|---|---|---|---|
| J1 | fit | | Enable Earth Fault Monitoring |
| J1 | | open | Disable Earth Fault Monitoring. |
| J2 | open | | Enable 20kHz tone detection |
| J2 | | fit | Disable 20kHz tone detection |

| Terminal No | Function |
|---|---|
| 1 | Input + |
| 2 | Input - |
| 3 | Screen |

### 8.3.1 VT681 Board Layout



### 8.4 VT725 (End of line monitor channel for FMS) Connector Pin Out and Jumper Settings

This module is part of the Audix FMS (fault monitoring system) and is installed in the FMS or FMSX chassis.

D725 is the FMS support and interface module for the D726 End of Line monitoring unit.

It provides phantom d.c. power for an end-of-line transponder (E.O.L) unit via the 100V loudspeaker line and has indicators on the FMS panel to show any LS line faults reported by the associated E.O.L. monitoring unit.

There are no adjustments on this card.

Variant D725V01 has an extra feature, a relay contact to indicate a fault has been detected on the Loudspeaker Line. The relay is normally de-energised in the no fault condition.

To reduce battery drain
To avoid a line-fault indication if FMS power fails.

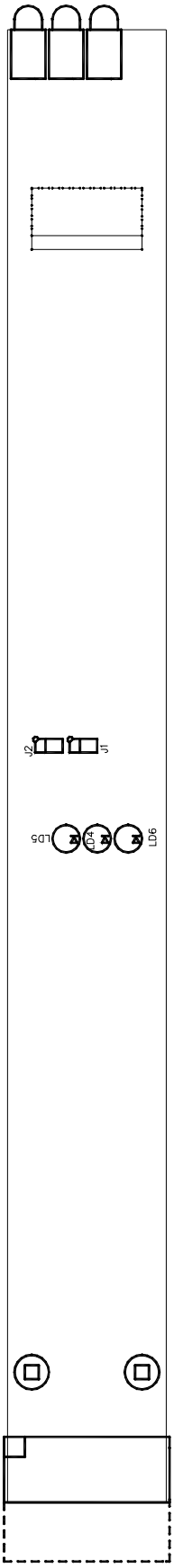
| ID | Std Fit | Alt | Function |
|---|---|---|---|
| J1 | fit | | Enable EARTH FAULT monitoring |
| J1 | | open | Disable EARTH FAULT monitoring |
| J2 | | | Never fitted |

| Terminal No | Function |
|---|---|
| 1 | Input + |
| 2 | Input - |
| 3 | Screen |
| 4 | Channel Fault relay NO (V725 V01 Only) |
| 5 | Channel Fault relay W (V725 V01 Only) |
| 6 | Channel Fault relay NC (V725 V01 Only) |

The following indicators are used on the front panel.

| Line Fault | Line Fail ❍ | EOL ❍ | Earth ❍ |
|---|---|---|---|
| Two legs O/C | ● | ● | |
| One conductor O/C | ● | | |
| EOL disconnected/faulty | | ● | |
| One conductor shorted to earth | | | ● |

### 8.4.1 VT725 Board Layout




FMS CHASSIS REAR

## 8.5 VT726 (End of Line Monitor Card) Connector Pin Out and Jumper Settings

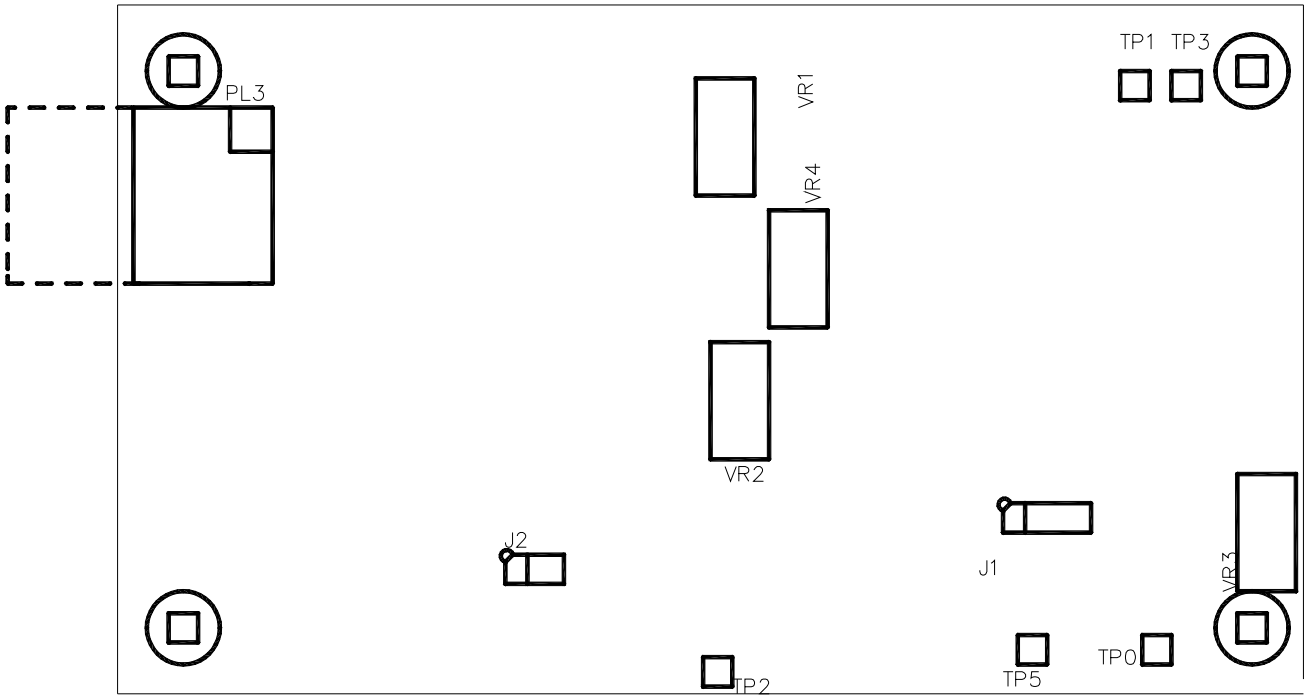
This module is part of the Audix FMS (fault monitoring system) it is installed at the far end of site loudspeaker cables.

| ID | Std Fit | Alt | Function |
|---|---|---|---|
| J1 | 2-3 | | Mode select: Detect 20kHz balance error. |
| J1 | | 1-2 | Mode select: Detect 20kHz level only. |

| Terminal No | Function |
|---|---|
| 1 | Input + |
| 2 | Input - |
| 3 | Screen |

There are no adjustments that can be made on this board.

### 8.5.1 VT726 Board Layout

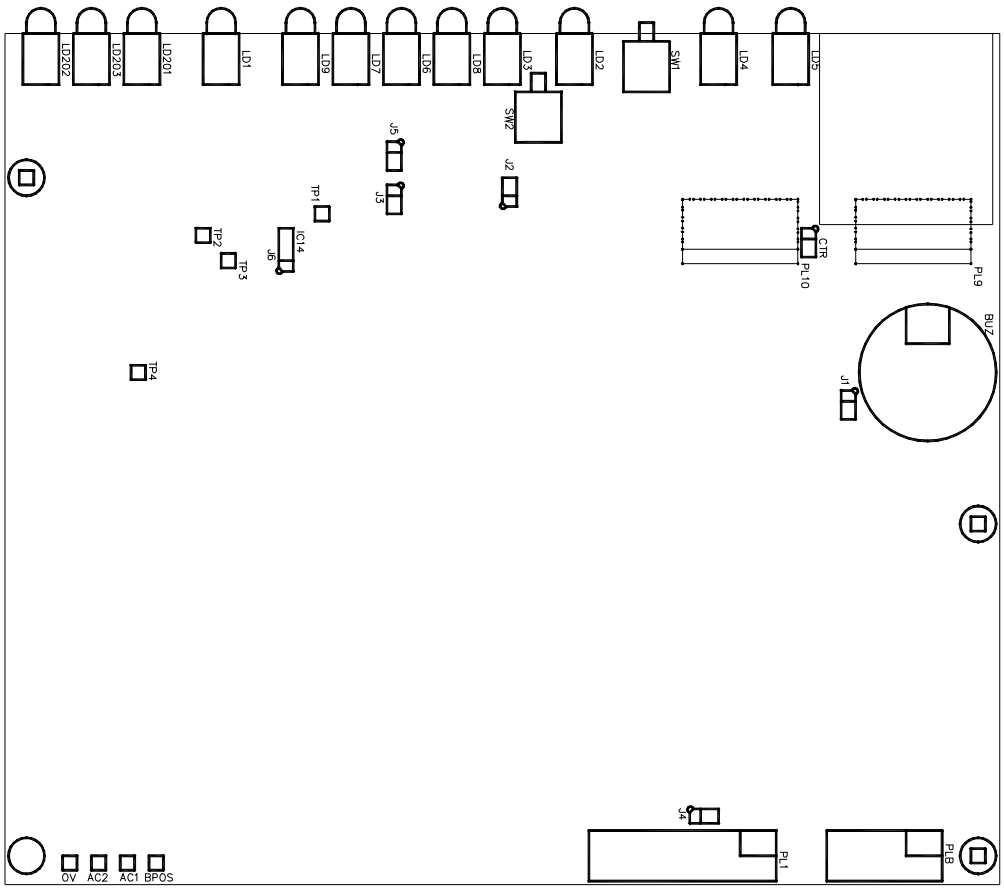


### 8.6 VT676 Main Board for FMS, Jumper Settings

This module is part of the Audix FMS (fault monitoring system) and is installed in the Audix FMS Fault Monitoring master Panel.

The card includes the power supply for the Channel Cards that are installed in the FMS.

| ID | Std Fit | Alt | Function |
|---|---|---|---|
| J1 | fit | | Enable buzzer |
| J1 | | open | Silence new fault warning buzzer |
| J2 | open | | FMS normal mode |
| J2 | | fit | FMS 'Test Mode' enable |
| J3 | open | | Watchdog Failure not reported as System Fault |
| J3 | | fit | Watchdog fault reported as System Fault |
| J4 | fit | | FMS bus common to master FMS 0V |
| J4 | | open | FMS bus common isolated from Slave ( FMSX ) 0V |
| J5 | open | | New Watchdog not reported as System Fault. |
| J5 | | fit | New Watchdog reported as System Fault. |
| J6 | 1-2 | | System Fault relay de-energised on Fault Condition |
| J6 | | 2-3 | System Fault relay cycle on Fault Cond. (follows Flashing LED) |

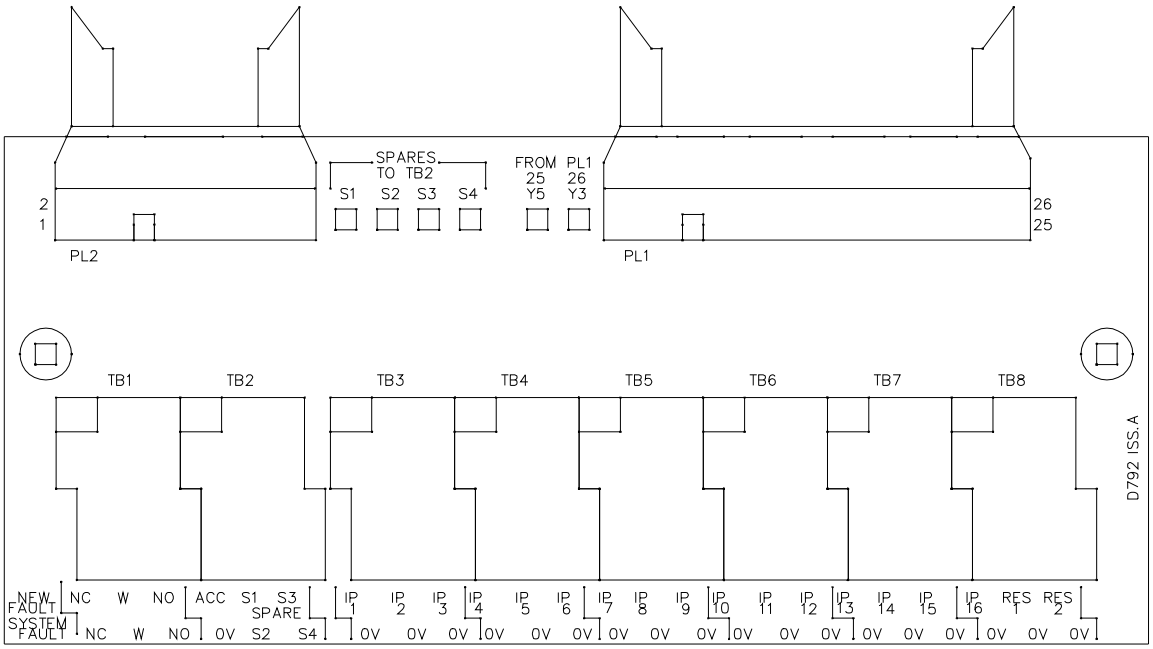



8.6.1 Test mode;

Fitting the Test Mode jumper inverts the operation of the loudspeaker line surveillance card (VT725) indicators. The “Line Fault” indicator pulses on when the surveillance source is OK. If the indicator does not light the surveillance level is not correct. Use the Alpha view/edit survey level menu to permanently activate a surveillance source (all other inputs are de-activated). Adjust the level until the line fault indicator is permanently lit. The message card surveillance level can be adjusted at this point. Other surveillance sources (ie Fireman’s microphone) are adjusted at the microphone.

### 8.7 D792a TPMSL100 Card

There are extra terminals and another ribbon cable connector on the TPMSL100 to accommodate the System Fault outputs from an Audix Systems FMS system.

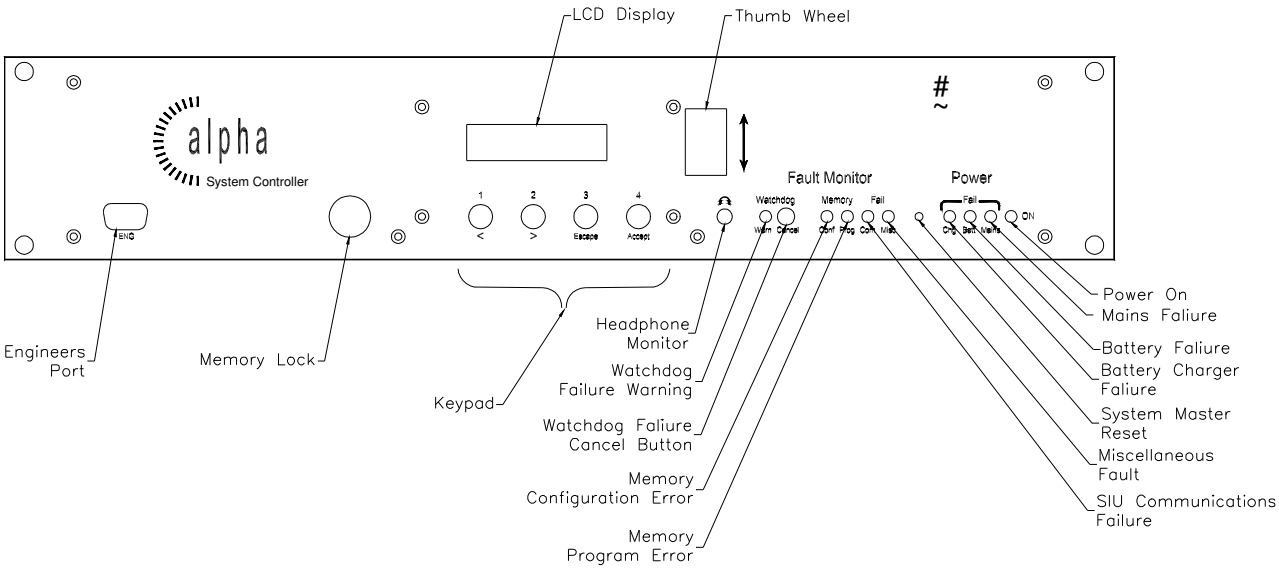

SPARES
TO TB2
S1 S2 S3 S4
FROM PL1
25 26
Y5 Y3
2
1
PL2
PL1
26
25
TB1 TB2 TB3 TB4 TB5 TB6 TB7 TB8
D792 ISS.A
NEW FAULT
SYSTEM FAULT
NC W NO ACC S1 S3
SPARE
NC W NO 0V S2 S4
IP 1 IP 2 IP 3 IP 4 IP 5 IP 6 IP 7 IP 8 IP 9 IP 10 IP 11 IP 12 IP 13 IP 14 IP 15 IP 16 RES 1 RES 2
0V 0V 0V 0V 0V 0V 0V 0V 0V 0V 0V 0V 0V 0V 0V 0V 0V 0V

Pinouts for TPMSL100: 10W ribbon cable for FMS Fault outputs

| Pin/Core | Description | FMS D Pin out |
|---|---|---|
| 1 | New Fault Contact (NO when relay not powered) | 2 |
| 2 | New Fault Contact (Wiper) | 6 |
| 3 | New Fault Contact (NC when relay not powered) | 1 |
| 4 | System Fault Contact (NO when relay not powered) | 8 |
| 5 | System Fault Contact (Wiper) | 3 |
| 6 | System Fault Contact (NC when relay not powered) | 7 |
| 7 | Fault Accept Contact I/P | 4 |
| 8 | 0V return for Accept Contact | 9 |
| 9 | DO NOT CONNECT | 5 |

## 9. Alpha fault indications

The alpha PSU card provides the built in FMS functions as described below as well as an interface to the existing FMS System.




Alpha Front Panel

- The alpha provides Fault indications for; Power supply, Battery Supply, and Battery Charger Supply.
- A fault indication for serial communications error is provided, and using the Front panel menu system more detailed information about the errors can be found
- The alpha also provides Fault indications for any Program and configuration errors in compliance with BS5839.
- The alpha has watchdog circuits on its CPU and message card DSP's. In conjunction with the external FMS this provides BS5839 compliant watchdog monitoring.

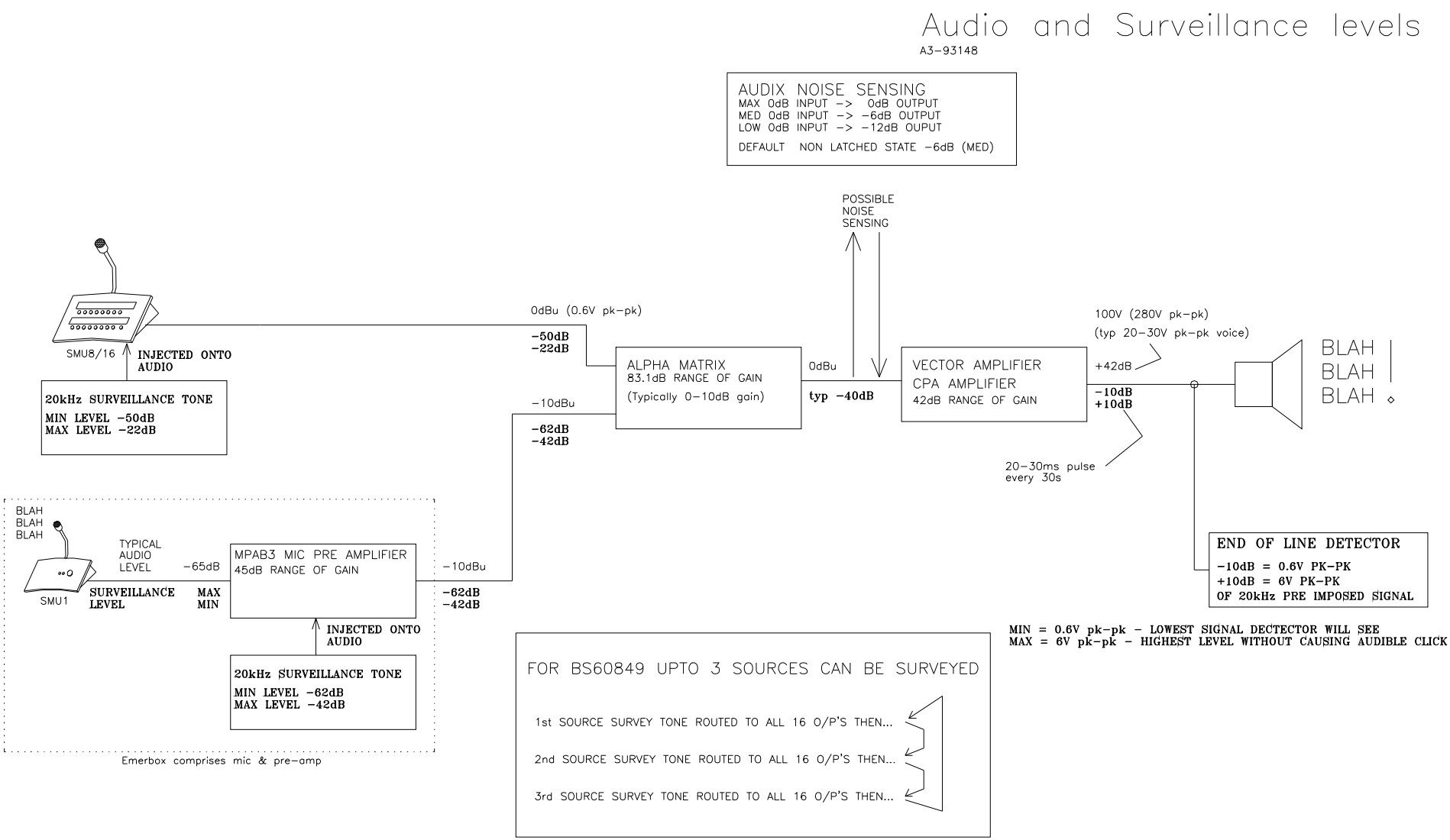
The front panel of the *alpha* provides essential Fault Monitoring information. This is to the show the user any problems with the system quickly.

Front panel LED Indicators from right to left:

- There is a single Green Power on LED. This indicates the *alpha* is running either from Mains or Battery.
- There are 3 Yellow Power fault LED's. These indicate Mains fail, Battery fail, Charger fail.
- The system Watchdog has a Yellow warning LED. This will latch on if there is a problem with the CPU or Message Cards. A press button is provided to cancel this indication.
- If you have any faults with the Program or Configuration in memory (resulting in a CRC error) these will be shown by the Yellow Memory fault indication
- Any other miscellaneous faults are indicated on the Yellow Misc. Fault LED.

- If communications between the *alpha* and an SMU then this will be shown on the Yellow Comms Fault LED. Using the LCD menu will allow the user to find which of the SMU's has failed

# Fault Monitoring System



# Fault Monitoring System

## Data and EOL levels

A3-93148